IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant : McKECHNIE et al. Art Unit : 1746
Serial No. : 09/308,860 Examiner : Alexander Markoff
Filed : January 12, 2001
Title : METHOD FOR CONTROLLING AND REMOVING DUST AND OTHER PARTICLES FROM A MATERIAL

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF OF APPELLANT

Transmitted herewith are Appellant's Brief, in triplicate, a Petition for a one-month extension of time and a check in the amount of **$430** as required by 37 C.F.R. §§1.17(a)(1) and (c).

A Notice of Appeal in this case was mailed to the Patent and Trademark Office on 19 May 2003 and was received on 22 May 2003. Accordingly, the Petition for Extension of Time extends the time to file this Brief to 22 August 2003.

Any additional fees in connection with this Brief should be charged to Deposit Account 06-1050.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

18 August 2003
Date of Deposit

Carol Tyrrell
Signature

Carol Tyrrell
Typed or Printed Name of Person Signing Certificate

(1) Real Party in Interest

The Real Parties in Interest are the joint Assignees, University of Southampton, of Highfield, Southampton, England and Reckitt Benckiser (UK) Limited of Slough, Berkshire, England.

(2) Related Appeals and Interferences

There are no related appeals or interferences.

(3) Status of Claims

Original claims 1-23 were cancelled by a Preliminary Amendment filed on 26 May 1999. Claims 24-34 and claim 55 were cancelled in an Amendment under 37 C.F.R. § 1.116 filed on 6 May 2003.

Claims 35-54 are pending in this application. All of these pending claims are under Appeal and a clean copy thereof is attached to this Brief as an Appendix, as required under 37 C.F.R. § 1.192(c)(9).

(4) Status of Amendments

No amendments, other than the cancellation of claims 24-34 and claim 55, were filed subsequent to Final Rejection.

(5) Summary of Invention

Pages & lines

The invention involves the control and removal of dust and other fine particles from a fabric material such as a carpet. Carrier particles and a gas are placed in a pressurized container, which is also provided with delivery means such as a tube or pipe. An electrostatic charge is imparted to the carrier particles as they pass through the tube or pipe. When the charged carrier particles are directed onto the surface of carpet or other

fabric material, dust and other fine particles on the surface agglomerate with the charged carrier particles. The agglomerated particles are then removed by vacuuming or brushing.

In the claims on Appeal, the charging occurs in situ – *i.e.*, when the claimed apparatus is employed for its intended use. The carrier particles are stored in the container in an uncharged state and the electrostatic charge is imparted as the carrier particles pass through the delivery tube or pipe. The required charge is imparted as a result of frictional contact with the inside of the tube or pipe.

Claims 35-40 are directed to apparatus for controlling and removing dust and other fine particles, by means of charging carrier particles.

Claims 41-45 are directed to a method for controlling or removing dust and fine particles using the apparatus. Claims 46-54 are directed to methods for dispensing the charged particles from the apparatus.

(6) Issues

All of the claims stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hughes (U.S. Patent No. 5,800,605 or WO 96/01285 or European Application No. 0 769 031) in view of any one of Law (U.S. Patent No. 5,765,761), Sun (U.S. Patent No. 5,753,302) and Mitsumora (U.S. Patent No. 5,865,381). As far as the Hughes references are concerned, since the written description portions of the U.S. Patent, the PCT publication and the European Patent Application documents are essentially identical[1], Applicants – with no objection from the Examiner – have discussed this reference in terms of U.S. Patent No. 5,800,605. The sole issue in this Appeal is whether this rejection is proper.

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1. The paragraph at column 1, lines 53-58 of the European Application document, is not present in the other two documents. However, this relates to prior art and is not relevant to any issue involved in this Appeal.

(7) Grouping of Claims

There are four groups of claims in this application and each group can be reasonably regarded as separately patentable over the other three groups. These groups are as follows:

I. Claims 35-40 are directed to an apparatus for delivering electrostatically charged carrier particles to a carpet or fabric material, which comprises a container for uncharged carrier particles and means for charging said particles to the carpet or fabric material. In its broadest aspect, the means comprise (i) a tube or pipe made of a material such that when the uncharged carrier particles are passed therethrough at high velocity, frictional contact from the inside of the tube or pipe imparts a specified minimum charge to mass ratio, and (ii) means for expelling the charged carrier particles at high velocity.

II. Claims 41-45 are directed to methods for controlling and removing dust and other fine particles in a carpet or fabric material which, in its broadest aspect, covers the use of the apparatus of the group I claims. The claims which are dependent on claim 41 are directed to tubes or pipes made of specified materials and to carrier particles made of specified materials.

III. Claims 46-49 are directed to a method for dispensing charged carrier particles from an apparatus from the group I type, the carrier particles comprising at least two different materials, a first material capable of assuming a charge of particular polarity and the second material capable of assuming a charge of opposite polarity.

IV. Claims 50-54 are directed to a method for dispensing charged carrier particles from a container of the group I type in which the tube or pipe has a plurality of holes (as in claim 38), with the holes being so dimensioned as to allow for electrical discharge through said holes, but not to allow the velocity of the gas stream and entrained carrier particles to be substantially reduced.

The group I claims are separately patentable from the other groups because they do not have any requirements as to the nature of the carrier particles (groups II and III) or of the specific requirements for the holes in the dispenser tube or pipe (group IV). Additionally, the claimed apparatus can be used – as indicated in the paragraph bridging pages 8 and 9 of the specification – to deliver charged carrier particles to surfaces other than carpets and fabrics.

The group III claims are separately patentable because of the requirement that the carrier particles be composed of at least two different materials, one material being capable of assuming, on charging, a charge of particular polarity and another material being capable of assuming, on charging, a charge of opposite polarity. As indicated in the specification – page 8, line 4 – providing carrier particles of opposite polarity enables the enhanced removal of dust and other fine particles from a carpet.

The methods of the group IV claims are separately patentable because passing carrier particles through a tube or pipe having holes of a particular size and configuration enables the charged carrier particles to be directed into otherwise inaccessible places; this is mentioned in the specification at page 9, line 6.

(8) Argument

Although Applicants are asserting that there are four possible patentably distinct inventions in the claims on appeal, the Examiner's rejections are directed to aspects of Applicants' invention that are common to all four groups.

The common thread that runs through all four groups of claims in this application is that of an apparatus and process which involves a dispensing system comprising a container for uncharged carrier particles and the charging of the carrier particles as they are passed through a delivery tube or pipe at high velocity. This aspect of Applicants' invention is the subject of all claims on Appeal. Claims 24 through 34 and claim 55, all of which have now been cancelled, were broad enough to include apparatus (and

corresponding methods of use) in which the container contained pre-charged particles. With the cancellation of claims 24-34 and 55, Hughes U.S. Patent No. 5,800,605, the primary reference, has lost all relevance.

Hughes is concerned with a process for preparing electrostatically charged particles. The charged particles can be used as "household cleaning particles" – column 2, line 45 – presumably in a cleaning formulation for household use. With respect to these electrostatically charged particles, the reference discloses:

> The charged particles of the present invention possess a more reproducible level of charge than was possible using the prior art charging techniques. In particular the advantages are that the electrical charge is located within the volume of the particles and the particles are pre-charged at the manufacturing stage, rather than being charged immediately prior to use. This results in the charge being retained for much longer than surface charged particles and also provides the particles with better sprayability characteristics than the surface charged particles.

U.S. Patent No. 5,800,605 at column 2, lines 52-61 (emphasis supplied). This is in direct contrast to what Applicants are claiming, since Applicants claimed apparatus and methods require charging at the point of delivery.

This difference is readily apparent in all four groups of claims. In claim 35 (group I), Applicants provide a container in which carrier particles to be electrostatically charged are stored, and a tube or pipe made of material such that, when the particles are passed down the delivery tube or pipe, a charge is imparted to said carrier particles. In claim 41 (group II), the claimed method comprises providing a container for storing carrier particles and passing these particles through a tube or pipe such that, as a result of frictional contact between the carrier particles and the tube or pipe, a charge is imparted to said particles. In claims 46 (group III) and 50 (group IV), the claimed methods comprise providing a container containing uncharged carrier particles, entraining these uncharged particles in a stream of gas and directing the stream of gas through a tube or pipe capable of imparting a charge to said particles by means of frictional contact.

Applicants' delivery system is an essential feature of all of the claims on Appeal. Hughes is concerned only with the process for preparing electrostatically charged particles, a process which incorporates a unipolar charge onto said particles at a temperature at or above the glass transition temperature or melting point of said particles. Hughes is not concerned at all with delivery systems and, to the extent that Hughes discloses any practical use for the charged particles, there is the clear statement – quoted above – to the effect that the particles are not to be charged immediately prior to use. This is in direct contrast to Applicants' claimed invention and therefore Hughes cannot possibly serve as an indication of obviousness for Applicants' claims.

The substance of the foregoing discussion of the Hughes reference was initially presented to the Examiner in an Amendment under Rule 116 filed on 1 May 2003. The arguments presented were entered on the record but the Examiner maintained his rejection of the claims on appeal, saying that

> Hughes teaches that the frictional type of charging of particles was conventional in the art and that such charging was usually conducted by end use.

citing column 1, lines 31-59, of U.S. Patent No. 5,800,605.

Frictional charging is, of course, well known in the art and Applicants are not claiming frictional charging as such. As far as the term "end use" is concerned, it should be noted that the Hughes reference is discussing the prior art of applying electrostatically charged pigment particles to a surface. This is done either by a corona charging system or by tribo or frictional charging system and, in any case, the charging process is under the control of the end user. Stated differently, the charging process is under the control of the person who is applying the charged particles. The reference cannot, under any circumstances, be interpreted as teaching a method (or an apparatus) that delivers electrostatically charged particles by a process in which the particles are stored in a container in an uncharged state and then charged when said carrier products are expelled therefrom.

The three secondary references are used by the Examiner only for their disclosure of charged particles having a charge-to-mass ratio which meet the requirements in all of Applicants' claims that the carrier particles bear a minimum charge-to-mass ratio of $\pm$ 1 x 10^{-4} C/Kg. However, Applicants are not asserting that any novelty resides in the carrier particles having this required charge-to-mass ratio. As pointed out in more detail in the Amendment filed herein on 3 September 2002, all of these references are in unrelated arts and one can argue that none of them is properly combinable with Hughes to support a rejection under 35 U.S.C. § 103(a). However, even conceding the validity of one or more of the Examiner's combinations, the obviousness rejection would not be valid. The fact that the carrier particles are charged to a particular charge-to-mass ratio disclosed in the art would still not render any of Applicants' claims obvious because the cited art does not disclose the basic concept embodied in Applicants' claims. There is no disclosure of any apparatus, or corresponding method of use, for delivering electrostatically charged carrier particles which involves providing a container of uncharged carrier particles and means for delivering said particles by the use of a tube or pipe and expulsion means, in which the tube or pipe is made of such material that, when the particles are passed therethrough at high velocity, the acquired charge is imparted to said carrier particles by means of frictional contact on the inside of the tube or pipe. The Examiner did not assert that the secondary references are useful for anything other than showing the charge-to-mass ratio and Applicants submit that none of the references – taken in any possible combination – teaches their basic inventive concept.

Conclusion

In view of the foregoing arguments, it is urged that this Board overrule the Examiner's rejection of claims 35-54.

Respectfully submitted,

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APPENDIX

Claims on Appeal:

35. An apparatus for delivering electrostatically charged particles to a carpet or fabric material, the apparatus comprising:

a) a container in which particles to be electrostatically charged are stored; and

b) means for delivering the particles from the container to the carpet or fabric material, said means comprising

i) a tube or pipe for delivering the carrier particles to the carpet or fabric material, and

ii) means for expelling particles at high velocity from the container to the carpet or fabric material,

said tube or pipe being made of such a material that, when the particles are passed down the delivery tube or pipe at high velocity, a minimum charge to mass ratio of $\pm$ 1 x 10^{-4} C/Kg is imparted to said particles by frictional contact on the inside of the tube or pipe.

36. An apparatus according to claim 35 in which the material from which the tube or pipe is made is selected from the group consisting of perforated polyethylene, unperforated and perforated polyvinyl chloride, unperforated and perforated nylon, and unperforated and perforated polytetrafluoroethylene.

37. An apparatus according to claim 36 in which the means for expelling particles at high velocity from the container to the material is compressed air or the suction effect of a vacuum cleaner.

38. An apparatus according to claim 36 in which the wall of the tube or pipe is formed with holes.

39. An apparatus according to claim 36 in which the charging region of the tube or pipe is located within the container.

40. An apparatus according to claim 39 in which the tube or pipe can be stored in the container and moved out of the container for delivering charged particles.

41. A method for controlling and removing dust and other fine particles in a carpet or fabric material comprising the steps of:

providing a container for storing carrier particles;

passing said carrier particles at high velocity through a tube or pipe made of a material such that, as a result of frictional contact between the carrier particles and the inside of said tube or pipe, a minimum charge to mass ratio of $\pm$ 1 x 10^{-4} C/Kg is imparted to said particles; and

expelling the resultant charged carrier particles at high velocity to the carpet or fabric material.

42. A method according to claim 41 in which the tube or pipe is made of perforated polyethylene and the carrier particles are tannic acid immobilized on polyvinylpyrrolidone beads.

43. A method according to claim 41 in which the tube is made of perforated or unperforated polyvinyl chloride and the carrier particles are selected from the group consisting of nylon, polyvinylpyrrolidone, tannic acid immobilized on ponvinylpyrrolidone beads, maize, calcite treated with oils and celite.

44. A method according to claim 41 in which the tube is made of perforated or unperforated nylon and the carrier particles are selected from the group consisting of polyester, polyvinylpyrrolidone, tannic acid immobilized on polyvinylpyrrolidone beads, cyclodextrin, untreated calcite and calcite treated with oils.

45. A method according to claim 41 in which the tube is made of polytetrafluoroethylene and the carrier particles are selected from the group consisting of nylon, polyvinylpyrrolidone, tannic acid immobilized on polyvinylpyrrolidone beads, cyclodextrin, untreated calcite and calcite treated with oils.

46. A method for dispensing charged particles to a surface from a container which contains uncharged particles, which method comprises the steps of:

entraining the uncharged particles in a stream of gas;

directing the stream of gas and entrained particles through a tube or pipe capable of imparting to the particles a minimum charge to mass ratio of $\pm$ 1 x 10^{-4}C/Kg, by frictional contact of the particles with the inner surface of said tube or pipe; and

directing the stream of gas and entrained charged particles to the surface, wherein a mixture of particles of at least two different materials is employed, the particles of a first material being capable of assuming, on charging, a charge of a particular polarity and the particles of a second material being capable of assuming, on charging, a charge of the opposite polarity to that of the first particles.

47. A method according to claim 46 wherein the tube or pipe is arranged within the container.

48. A method according to claim 47 wherein the tube or pipe is arranged in a non-linear fashion.

49. A method according to claim 48 wherein the tube or pipe is formed as a coil.

50. A method for dispensing charged particles to a surface from a container which contains uncharged particles, which method comprises the steps of:

entraining the particles in a stream of gas;

directing the stream of gas and entrained particles through a tube or pipe capable of imparting to the particles a minimum charge to mass ratio of $\pm$ 1 x 10^{-4} C/Kg, by frictional contact of the particles with the inner surface of said tube or pipe; and

directing the stream of gas and entrained charged particles to a surface, wherein the tube or pipe has a plurality of holes which are dimensioned so as to allow for electrical discharge through said holes, but not to allow the velocity of the stream of gas and entrained particles flowing through said holes to be substantially reduced.

51. A method according to claim 50 wherein the holes each have a diameter of less than 5 micrometers.

52. A method according to claim 50 wherein the tube or pipe is arranged within the container.

53. A method according to claim 52 wherein the tube or pipe is arranged in a non-linear fashion.

54. A method according to claim 53 wherein the tube or pipe is formed as a coil.

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